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Forest
Service

Intermountain
Region

Ogden, Utah



Forest Insect and Disease Conditions

DEC 22 1987
PROCUREMENT SECTION
CURRENT SERIAL RECORDS

Intermountain Region

1987



FOREST INSECT AND DISEASE CONDITIONS

**Intermountain Region
1987**

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RESUMÉ OF CONDITIONS

Tree mortality caused by the mountain pine beetle decreased from 1,511,600 trees in 1986 to 181,300 trees in 1987. Most of this reduction was attributed to the collapse of the massive infestation on the Ashley National Forest and a significant reduction in mortality on the Wasatch-Cache National Forest. Infestations persist on the Ashley, Bridger-Teton, Boise, Challis, Salmon, Sawtooth and Wasatch-Cache National Forests.

The spruce beetle continued to cause extensive mortality on the Payette National Forest, with approximately 15,900 fading trees, indicative of 1985 attacks, detected during the 1987 aerial survey. Smaller infestations are present on the Boise, Fishlake, Manti-LaSal and Uinta National Forests.

Host trees on approximately 873,600 acres were defoliated by the western spruce budworm during 1987 compared to 3.1 million acres in 1986. Infestations decreased in size and intensity on the Boise, Caribou, Challis, Payette Salmon, Sawtooth and Targhee National Forests in southern Idaho; on the Bridger-Teton National Forest in Wyoming; and on the Dixie, Fishlake and Wasatch-Cache National Forests in Utah.

Douglas-fir beetle killed an estimated 12,600 trees in 1987 on National Forest lands, a two-fold increase from 1986. Mortality increased on the Boise, Payette and Targhee National Forests in southern Idaho and on the Bridger-Teton National Forest in Wyoming. Significant infestations are concentrated in the Deep Creek Range southwest of Pocatello on lands administered by the Fort Hall Indian Reservation, the State of Idaho and the Bureau of Land Management.

Tree mortality attributed to a pine engraver beetle/western pine beetle complex killed approximately 9,900 trees on the Boise, Payette and Salmon National Forests in southern Idaho.

Elytroderma needle disease on ponderosa pine was noted for the first time in the Manhattan Creek area on the Idaho City Ranger District of the Boise National Forest, Idaho.

Douglas-fir needlecast is epidemic in southern Idaho and will cause noticeable defoliation of host understory trees at the beginning of the 1988 growing season.

Extensive blowdown of spruce occurred on the Bridger-Teton National Forest and Grand Teton National Park in Wyoming. A smaller area of spruce blowdown was detected on the Wasatch-Cache National Forest in Utah.

BARK BEETLES

Mountain Pine Beetle, *Dendroctonus ponderosae* Hopkins

Tree mortality attributed to the mountain pine beetle decreased from 1,511,600 trees in 1986 to 181,300 trees in 1987. Most of this reduction was due to the collapse of the massive infestation in lodgepole and ponderosa pine stands on the Ashley and Wasatch-Cache National Forests in northeastern Utah. Declining, but significant, mortality occurred on the Ashley and Wasatch-Cache National Forests while mortality on the Dixie and Manti-LaSal National Forests remained near 1986 levels.

Static to increasing mountain pine beetle activity occurred on all National Forests in southern Idaho, except the Caribou National Forest where mortality decreased substantially. Approximately 26,800 trees were killed in 1987 compared to 18,300 trees killed in 1986. Significant infestations are located near Lost Basin, near Deadwood Reservoir, and along the headwaters of Trinity Creek on the Boise National Forest; along Squaw Creek on the Challis National Forest; and throughout the Big Wood River Drainage and Sawtooth Valley on the Sawtooth National Forest. During the 1987 aerial survey of the Salmon National Forest, lodgepole pine mortality located on the perimeter of recent burns was attributed to mountain pine beetle; however, subsequent ground surveys revealed that this mortality was primarily a result of fire scorch and opportunistic attacks by pine engraver beetles. Mountain pine beetle is causing relatively minor damage in stands adjacent to these fires. Only minimal activity was observed on the Payette and Targhee National Forests.

Specific mortality figures summarized from aerial detection surveys are displayed in Table 1, and the status of infestations by state is found in Table 2. Locations of major infestations throughout the Region are shown in Figure 1.

Spruce Beetle, *Dendroctonus rufipennis* (Kirby)

Aerial and ground surveys indicated that approximately 725 mortality centers, containing approximately 16,500 trees, were present on the Payette and Boise National Forests in southern Idaho in 1987 compared to 900 mortality centers and 14,000 trees in 1986. Aggressive salvage and trap tree programs in accessible commercial forest areas have reduced the total number of mortality centers while in untreated areas mortality centers continued to expand. Mortality was scattered throughout host type on the McCall, New Meadows and Council Ranger Districts, Payette National Forest, and on the Cascade Ranger District, Boise National Forest.

In Utah, 300 trees were killed by spruce beetle in the Huntington Creek Drainage of the Manti-LaSal National Forest. Elsewhere, low levels of beetle activity were noted on the Wasatch-Cache and Uinta National Forests.

Mortality figures from aerial detection surveys are found in Table 1. Locations of infestations on the Payette National Forest are shown in Figure 2.

TABLE 1. Number of trees killed by bark beetles in Region 4 during 1986-87 as determined by aerial detection surveys.

Forest ¹ (& Adjacent Land)	Year	Mountain Pine Beetle	Trend	Douglas- Fir Beetle	Trend	lps/ WPB ²	Trend	Spruce Beetle	Trend
Ashley	1987	133,409	Decrease	0	Static	0	Static	0	Static
	1986	1,302,126	—	0	—	0	—	0	—
Boise	1987	4,518	Static	5,027	Increase	7,907	Increase	669	Static
	1986	4,248	—	1,715	—	1,935	—	1,095	—
Bridger- Teton	1987	3,224	Decrease	1,721	Increase	0	Static	0	Static
	1986	10,703	—	745	—	0	—	0	—
Caribou	1987	182	Decrease	1,262	Static	0	Static	0	Static
	1986	4,628	—	1,415	—	0	—	35	—
Challis	1987	4,730	Increase	0	Static	0	Static	0	Static
	1986	2,494	—	0	—	0	—	0	—
Dixie	1987	217	Static	0	Static	0	Static	0	Static
	1986	210	—	0	—	0	—	0	—
Fishlake	1987	0	Static	0	Static	0	Static	105	Static
	1986	0	—	0	—	0	—	63	—
Grand Teton National Park	1987 ³	**	—	**	—	**	—	**	—
	1986	217	—	43	—	0	—	56	—
Manti- LaSal	1987	280	Decrease	63	Increase	0	Static	300	Increase
	1986	397	—	0	—	0	—	56	—
Payette	1987	1,287	Increase	1,855	Increase	1,364	Increase	15,873	Increase
	1986	734	—	301	—	235	—	12,600	—
Salmon	1987	3,754	Increase	79	Decrease	602	Increase	0	Static
	1986	852	—	133	—	155	—	63	—
Sawtooth	1987	11,609	Increase	1,200	Static	53	Static	0	Static
	1986	4,620	—	1,202	—	77	—	49	—
Targhee	1987	735	Static	1,220	Increase	0	Static	0	Static
	1986	738	—	348	—	0	—	25	—
Uinta	1987	0	Decrease	0	Static	0	Static	84	Static
	1986	600	—	0	—	0	—	112	—
Wasatch- Cache	1987	17,355	Decrease	153	Decrease	0	Static	0	Static
	1986	179,490	—	335	—	0	—	49	—
TOTAL	1987	181,300		12,580		9,926		17,031	
	1986	1,511,635		6,237		2,402		14,133	

¹ Only portions of Forests flown; actual mortality figures are probably considerably higher.

² Western pine beetle abbreviated as WPB

³ Not surveyed in 1987

TABLE 2. Status of mountain pine beetle infestations by state during 1987.

IDAHO		
Land Ownership Class	Outbreak Area (Thousand Acres)	Number of Trees (Thousands)
National Forest	33.2	24.8
Other Federal	1.0	0.1
State and Private	1.9	1.5
TOTAL	36.1	26.8

UTAH		
National Forest	92.5	144.0
Other Federal	1.9	3.0
State and Private	3.0	4.3
TOTAL	97.4	151.3

WYOMING		
National Forest	2.0	2.7
Other Federal	0.1	0.1
State and Private	0.2	0.4
TOTAL	2.3	3.2

FIGURE 1. Areas infested by mountain pine beetle in Region 4 during 1987 as observed during aerial detection surveys.

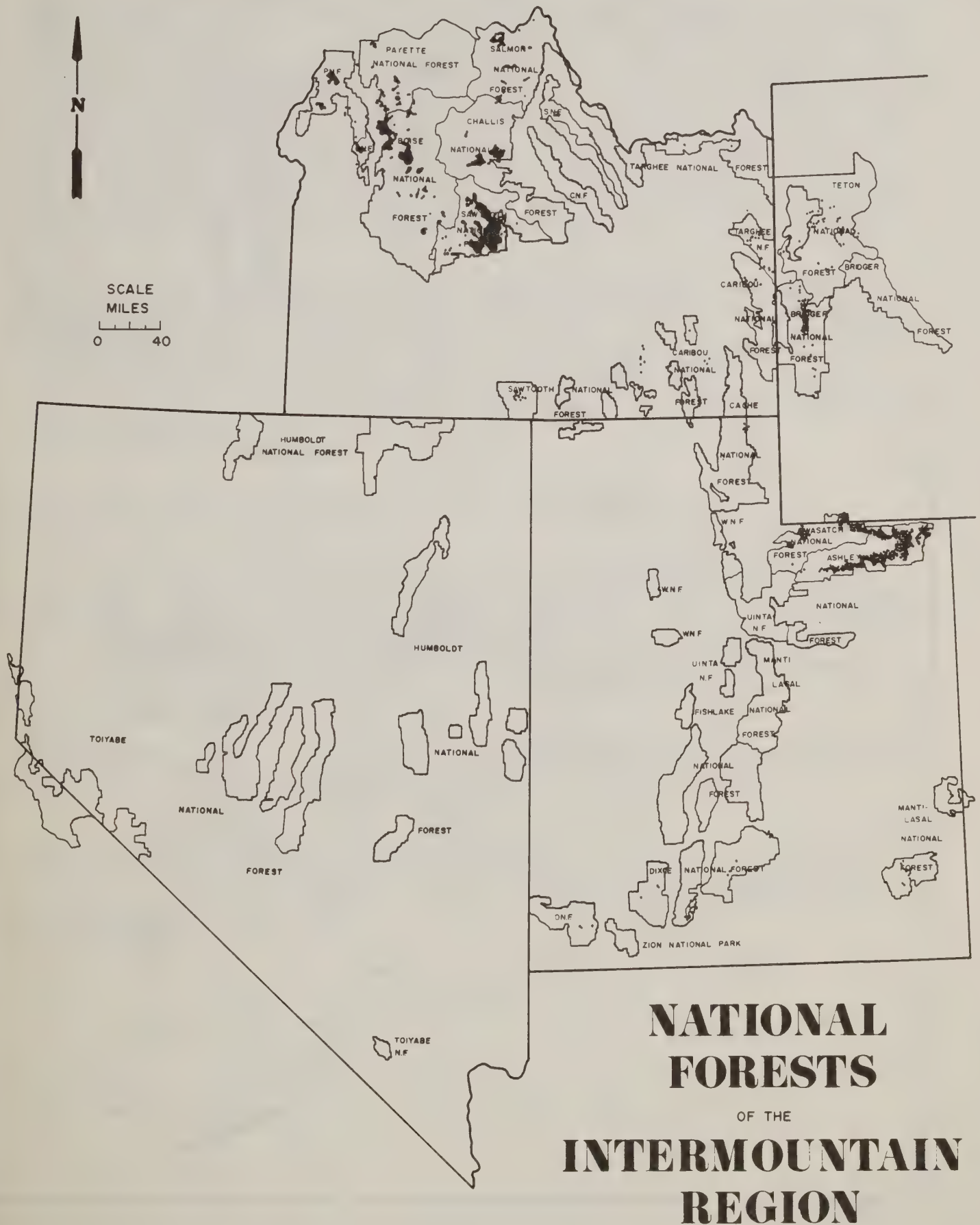
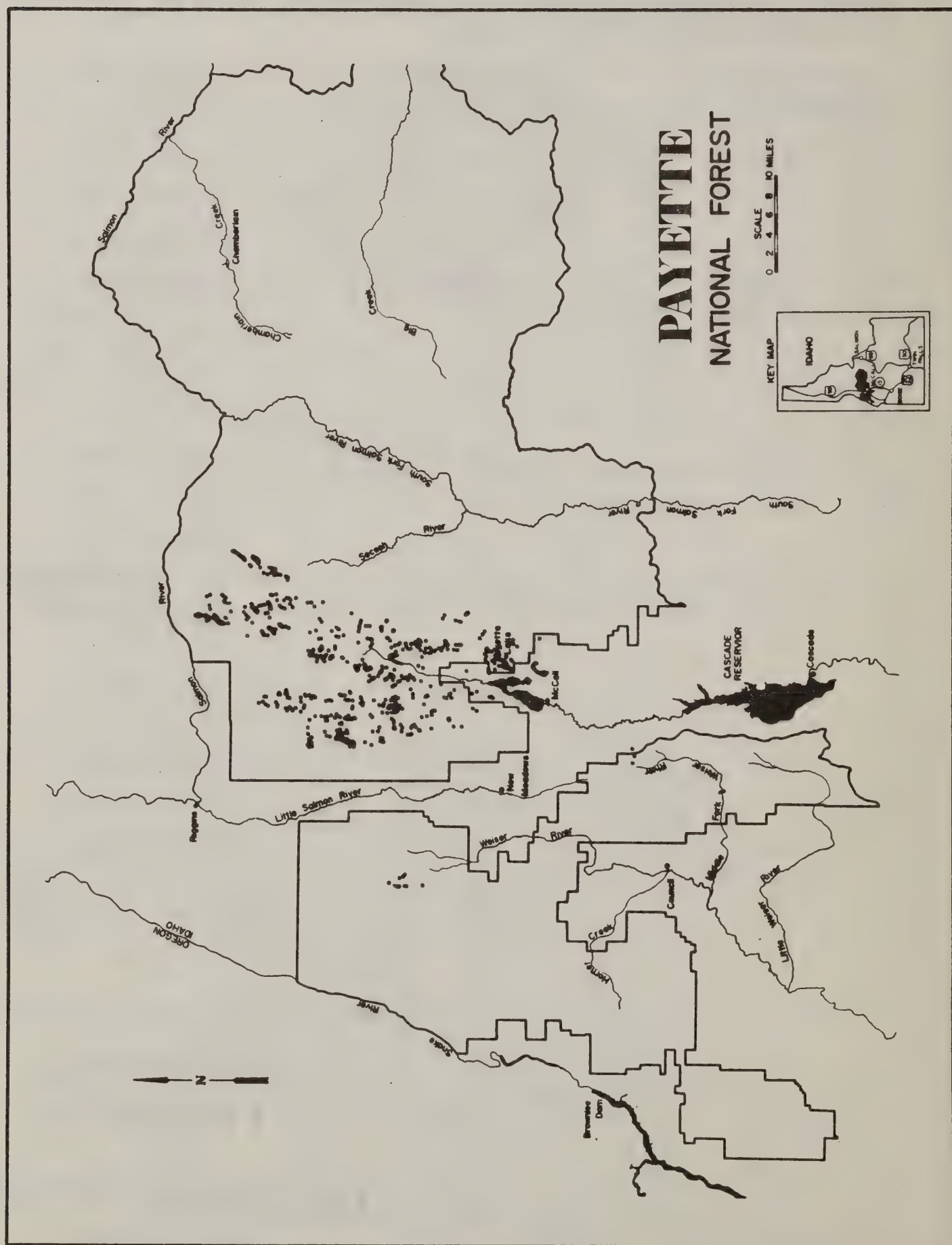


FIGURE 2. Areas infested by spruce beetle on the Payette National Forest during 1987 as observed during aerial detection surveys.



Douglas-Fir Beetle, *Dendroctonus pseudotsugae* Hopkins

Douglas-fir mortality on National Forest lands caused by the Douglas-fir beetle continued to increase throughout southern Idaho with 10,600 trees killed in 1987 compared to 5,100 trees in 1986. Increases in beetle activity occurred on the Boise, Payette and Targhee National Forests. Activity was concentrated in the Shaefer Butte area on the Boise National Forest, and throughout the Monroe Butte-Sturgill Peak area and along the Middle Fork of the Weiser River Drainage on the Payette National Forest. While activity remained relatively static on the Caribou and Sawtooth National Forests significant infestations continue in the Scout Mountain and Portneuf Ranges on the Caribou National Forest and throughout the South Fork of the Boise River Drainage on the Sawtooth National Forest. Elsewhere in southern Idaho approximately 11,400 trees were killed southwest of Pocatello along the Deep Creek range on lands administered by the Fort Hall Indian Reservation, the State of Idaho and the Bureau of Land Management.

In Utah, Douglas-fir beetle continued to kill trees weakened by western spruce budworm defoliation in Logan Canyon on the Wasatch-Cache National Forest. Many scattered Douglas-fir beetle infested trees were detected throughout the Bookcliff Plateau on lands administered by the Bureau of Land Management. In western Wyoming, on the Bridger-Teton National Forest tree mortality increased from 750 trees in 1986 to 1,700 trees in 1987. Infestations persist in the Greys River, Hoback and Buffalo Fork Drainages. Specific mortality figures as noted by aerial detection surveys are found in Table 1.

Western Pine Beetle, *Dendroctonus brevicomis* LeConte; and Pine Engraver Beetle, *Ips pini* (Say)

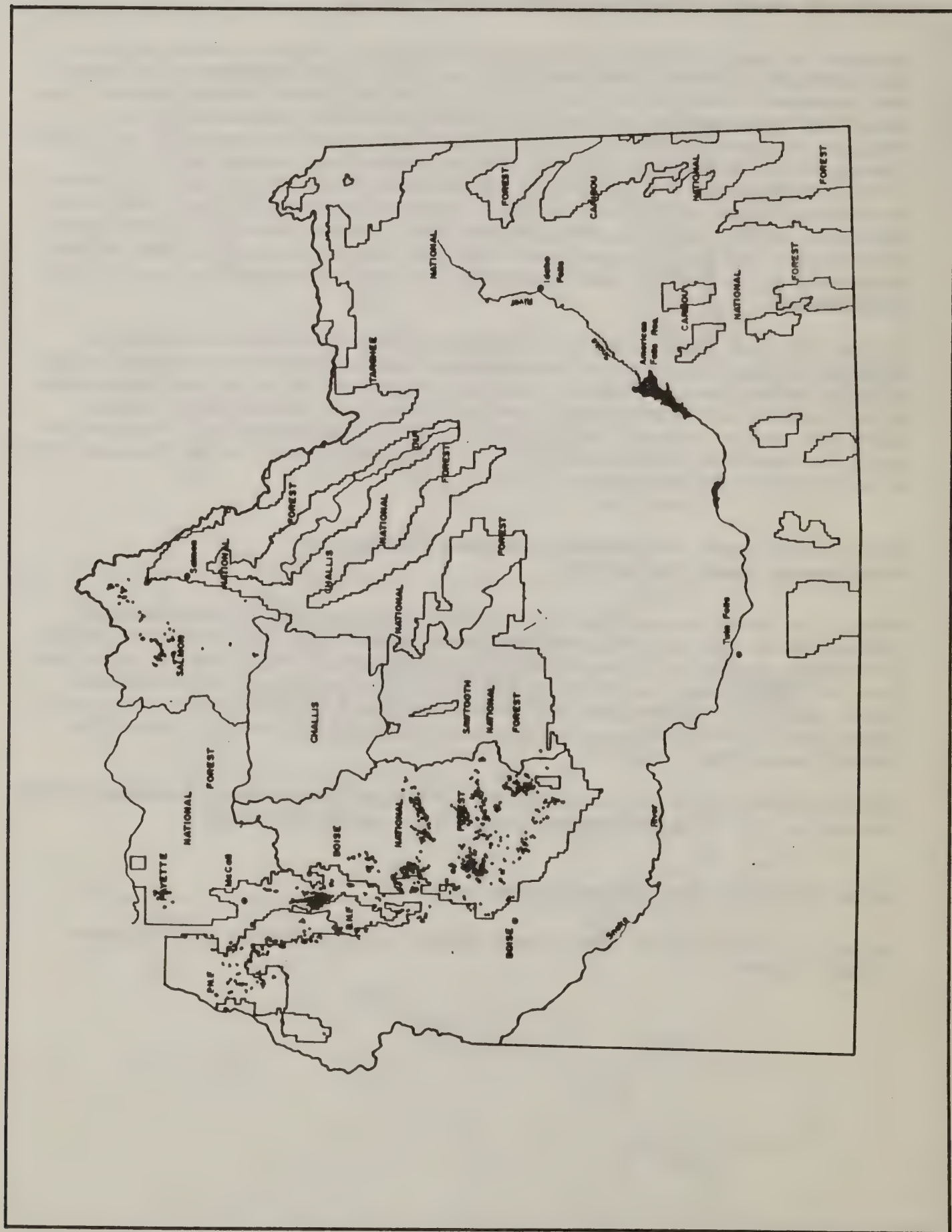
Western pine beetle, frequently intermixed with pine engraver beetle, killed approximately 9,900 ponderosa pine trees throughout host type in southern Idaho with most activity located on the Boise, Payette and Salmon National Forests. Extensive mortality occurred in the Boise Basin and throughout the South Fork of the Payette River Drainage on the Boise National Forest, along Warm Springs Creek and the Middle Fork of the Payette River Drainage on the Payette National Forest and along Spring Creek, Cove Creek and Humbug Creek on the Salmon National Forest.

Specific mortality figures from aerial detection surveys are found in Table 1. Locations of major infestations on the Boise and Payette National Forests are shown in Figure 3.

Jeffrey Pine Beetle, *Dendroctonus jeffreyi* Hopkins

Jeffrey pine beetle killed 400 trees in the Franktown Creek area on the Toiyabe National Forest in Nevada .

FIGURE 3. Areas infested by western pine beetle and pine engraver beetle in southern Idaho during 1987 as observed during aerial detection surveys.



DEFOLIATORS

Western Spruce Budworm, *Choristoneura occidentalis* Freeman

Defoliation by western spruce budworm decreased in extent and intensity throughout the Inter-mountain Region. Trees on approximately 873,600 acres were defoliated during 1987 compared to 3.1 million acres of defoliation in 1986. This 72 percent reduction in acreage of detectable defoliation is likely attributed to unseasonably warm spring temperatures followed by freezing temperatures resulting in widespread larval mortality.

In southern Idaho, defoliation on the Boise, Caribou, Challis, Payette, Salmon, Sawtooth and Targhee National Forests decreased from 2.9 million acres in 1986 to 834,500 acres during 1987. This decrease in acreage of defoliation was accompanied by a decrease in intensity of defoliation. In 1986 areas classified as heavily defoliated accounted for 44 percent of the total defoliated acreage; while in 1987 less than 5 percent of the defoliated acreage was classified as heavily defoliated. Defoliation on the Dixie, Fishlake and Wasatch-Cache National Forests in Utah decreased from 95,500 acres in 1986 to 37,700 acres during 1987. On the Bridger-Teton National Forest in western Wyoming defoliation declined from 111,700 acres in 1986 to 1,400 acres in 1987.

Infested acreage by National Forest is displayed in Table 3, and the status of infestations by state is shown in Table 4. Locations of major infestations throughout the Region are identified in Figure 4.

Sugar Pine Tortrix, *Choristoneura lambertiana* (Busck); and Pine Needle Sheathminer, *Zelleria haimbachi* Busck

Isolated infestations continued to occur in lodgepole and ponderosa pine on the Boise, Payette, Sawtooth and Targhee National Forests in southern Idaho. Heavily infested trees have severe shoot deformity resulting in a loss of apical dominance.

Douglas Fir Tussock Moth, *Orgyia pseudotsugata* (McDunnough)

No defoliation was noted in southern Idaho during aerial detection surveys.

Pheromone baited detection traps were placed on the Boise, Payette, and Sawtooth National Forests, State and BLM lands around Bellevue, Idaho, and in the Owyhee Mountains of southwestern Idaho. Survey results indicate decreasing or static populations on the Boise, Payette, Salmon and Sawtooth National Forests. Trap catches at Dewey Peak in the Owyhee Mountains remained high. Pheromone baited trap catches for the period from 1980-1987 are summarized in Table 5.

Gypsy Moth, *Lymantria dispar* L.

Fifty-eight developed sites were monitored in southern Idaho in cooperation with the Idaho Department of Agriculture. The first reported gypsy moth trapped during this annual detection survey in southern Idaho was found in a pheromone trap located near Cascade, Idaho.

TABLE 3. Acres of defoliation by western spruce budworm in Region 4 during 1986-1987 as observed by aerial detection surveys.

Forest ¹ (& Adjacent Land)	Defoliation Intensity					Change
	Year	Light	Moderate	Heavy	Total	
Boise	1987	337,400	58,000	31,300	426,700	- 707,700
	1986	76,900	302,200	754,600	1,133,700	
Bridger-Teton	1987	1,400	0	0	1,400	- 110,300
	1986	98,400	12,700	600	111,700	
Caribou	1987	32,300	15,100	4,600	52,000	- 224,900
	1986	47,000	141,100	88,800	276,900	
Challis	1987	16,900	4,000	0	20,900	- 14,000
	1986	32,600	2,300	0	34,900	
Dixie	1987	5,000	3,300	4,000	12,300	- 15,100
	1986	6,300	9,100	12,000	27,400	
Fishlake	1987	0	0	0	0	- 5,000
	1986	5,000	0	0	5,000	
Grand Teton National Park	1987 ²	**	**	**	**	**
	1986	23,100	1,600	100	24,800	
Payette	1987	119,000	15,800	0	134,800	- 483,600
	1986	61,800	194,000	362,600	618,400	
Salmon	1987	60	540	0	600	- 29,000
	1986	29,600	0	0	29,600	
Sawtooth	1987	65,000	18,200	900	84,100	- 270,700
	1986	60,700	162,800	131,300	354,800	
Targhee	1987	104,400	9,200	1,800	115,400	- 341,400
	1986	266,800	171,400	18,600	456,800	
Wasatch-Cache	1987	10,000	15,400	0	25,400	- 37,700
	1986	41,700	5,200	16,200	63,100	
TOTAL	1987	691,460	139,540	42,600	873,600	- 2,263,500
	1986	749,900	1,002,400	1,384,800	3,137,100	

¹ Only portions of Forest flown; actual acreage figures are probably considerably higher.

² Not surveyed in 1987.

TABLE 4. Status of western spruce budworm by State during 1987.

IDAHO

Land Ownership Class	Outbreak Area (Thousand Acres)
National Forest	783.1
Other Federal	1.2
State and Private	50.2
TOTAL	834.5

UTAH

National Forest	36.2
Other Federal	0.5
State and Private	1.0
TOTAL	37.7

WYOMING

National Forest	1.4
Other Federal	0.0
State and Private	0.0
TOTAL	1.4

FIGURE 4. Areas infested by western spruce budworm in Region 4 during 1987 as observed during aerial detection surveys.

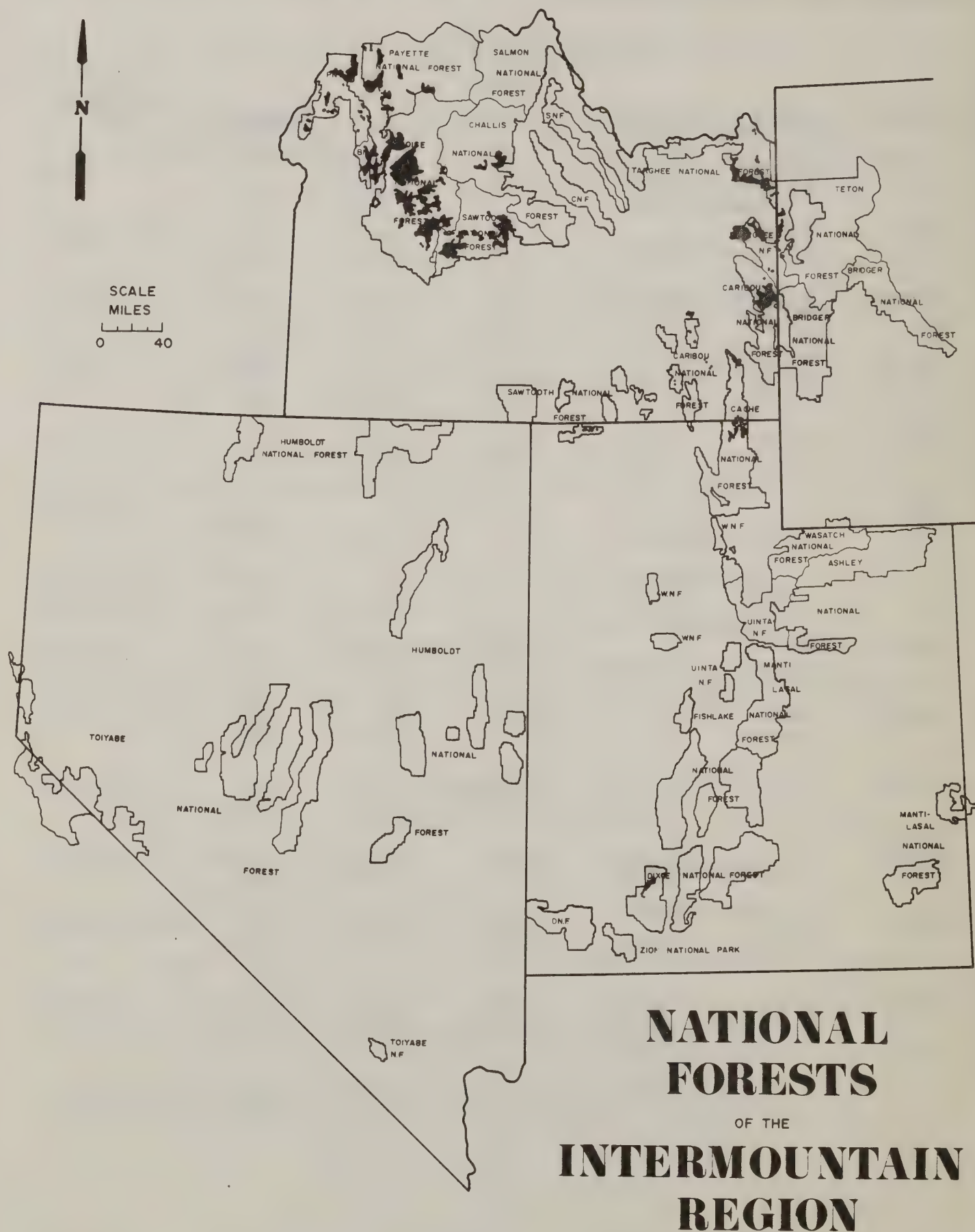


TABLE 5. Summary of male Douglas-fir tussock moths caught in pheromone-baited sticky traps distributed in southern Idaho, 1980-1987.

Survey Site	Mean Number of Male Douglas-fir Tussock Moths/Trap by Year							
	1980	1981	1982	1983	1984	1985	1986	1987
Boise National Forest								
Anderson Creek Divide	*	1.2	0.0	11.0	*	*	*	*
Bear Creek	*	*	0.0	32.8	0.4	0.0	1.2	1.4
Skunk Creek	*	0.2	0.6	29.0	0.0	1.0	1.2	0.2
Yellow Pine Creek	*	*	0.0	10.6	0.4	*	*	*
Payette National Forest								
Adams Creek	*	*	53.6	39.6	7.8	4.0	17.6	8.8
Barinaga Corral	*	*	*	44.2	0.4	2.8	4.0	2.0
Bear Saddle	*	*	15.2	44.0	1.0	0.2	0.2	0.4
Brown's Pond	*	0.0	0.6	11.0	0.5	*	*	*
E. Fk. Brownlee Creek	*	*	61.2	50.6	2.6	3.4	27.0	6.0
E. Fk. Brownlee Creek 2	*	*	*	*	*	*	*	12.0
E. Fk. Brownlee Creek 3	*	*	*	*	*	*	*	0.8
Fourbit Creek	*	*	49.8	42.8	*	4.8	30.4	2.0
Fourbit Creek 2	*	*	*	*	*	*	*	2.3
Fourbit Creek 3	*	*	*	*	*	*	*	37.0
Little Weiser	*	*	*	25.6	*	0.6	0.4	*
McDowell Trail	*	*	*	35.8	5.0	6.8	24.6	1.2
McDowell Trail 2	*	*	*	*	*	*	*	3.2
McDowell Trail 3	*	*	*	*	*	*	*	2.3
Olive Creek	*	*	36.8	51.2	14.6	10.5	46.8	9.8
Olive Creek 2	*	*	*	*	*	*	*	12.6
Olive Creek 3	*	*	*	*	*	*	*	1.8
Seid Creek	*	*	*	17.4	11.2	*	27.2	4.8
Seid Creek 2	*	*	*	*	*	*	*	6.8
Seid Creek 3	*	*	*	*	*	*	*	2.6
Stacy Creek	*	*	*	42.8	18.0	8.8	3.8	5.0
Salmon National Forest								
Arnett Creek	*	*	0.0	0.6	0.0	*	*	*
Colson Creek	*	*	15.2	39.0	3.2	*	7.2	5.2
Headwaters	*	*	*	*	0.0	*	*	*
Lick Creek	*	*	7.6	38.4	0.6	*	6.0	0.6
Porphyry Creek	*	*	0.0	4.6	0.0	*	*	*
Sawtooth National Forest								
Couch Summit	*	0.4	0.0	7.0	0.0	*	*	*
Howell Canyon	*	*	*	*	0.2	*	*	*
Little Water Gulch	*	3.8	13.6	27.0	17.2	0.0	34.6	26.6
Little Water Gulch 2	*	*	*	*	*	*	*	3.5
Little Water Gulch 3	*	*	*	*	*	*	*	16.4
Virginia Gulch	*	0.6	2.0	26.8	1.8	0.0	4.8	6.8
Warm Springs	*	*	2.6	14.8	0.8	*	*	*
Idaho State Lands								
Sharps Canyon	*	19.4	16.2	41.2	1.3	5.2	22.6	8.4
B.L.M. Lands								
Dewey Peak	55.0	64.0	*	*	15.0	1.6	33.7	38.6
Dewey Peak 2	*	*	*	*	*	*	*	2.4
Dewey Peak 3	*	*	*	*	*	*	*	1.8
Mill Creek	0.6	47.6	*	*	6.6	0.0	0.4	0.0
New York Summit	*	*	*	*	0.0	*	1.8	3.8
So. Fk. Boulder Creek	*	*	*	*	0.7	0.2	1.8	0.2

* Site was not sampled.

Intermountain Region—Status of insects in southern Idaho, Nevada, Utah, and western Wyoming.

Insect	Host	Location	Remarks
Douglas-fir beetle <i>Dendroctonus pseudotsugae</i>	Douglas-fir	Idaho, Utah, Wyoming	Activity increased in 1987, 12,600 trees were killed on National Forest lands. Increases in beetle activity occurred on the Boise, Payette and Targhee National Forests, ID; and on Bridger-Teton National Forest, WY. Significant infestations are concentrated in the Deep Creek Range southwest of Pocatello, ID.
Douglas-fir tussock moth <i>Orgyia pseudotsugata</i>	Douglas-fir	Idaho	No new defoliation was observed but moths were detected in pheromone traps in southern Idaho.
Eurytomid wasp <i>Eurytoma</i> sp.	Ponderosa pine	Idaho	Infestations were noted in ponderosa pine plantations on the Boise National Forest, ID.
Gouty pitch midge <i>Cecidomyia piniinopis</i>	Pines	Idaho	Isolated infestations were found in pine regeneration on the New Meadows Ranger District, Payette National Forest, ID.
Gypsy moth <i>Lymantria dispar</i>	-	Idaho	One male gypsy moth was caught in pheromone traps near Cascade, ID in 1987.
Jeffrey pine beetle <i>Dendroctonus jeffreyi</i>	Jeffrey pine	Nevada	Minor insect activity was detected on the Toiyabe National Forest, NV.
Locust borer <i>Megacyllene robiniae</i>	Black locust	Idaho	Approximately 124 black locusts within Boise, ID were killed by the locust borer.
Magdalis weevil <i>Magdalis lecontei</i>	Ponderosa pine	Idaho	Minor defoliation was observed on ponderosa pine growing on Harris Creek Summit, Boise National Forest, ID.
Mountain pine beetle <i>Dendroctonus ponderosae</i>	Lodgepole pine, ponderosa pine, other pines	Idaho, Utah, Wyoming	Mountain pine beetle activity decreased throughout the Region. Tree mortality decreased from 1.5 million trees in 1986 to 181,300 trees in 1987. Significant infestations occurred on the Boise, Challis, Salmon and Sawtooth National Forests, ID; the Ashley and Wasatch-Cache National Forests, UT; and the Bridger-Teton National Forest, WY.
Pine butterfly <i>Neophasia menapia</i>	Ponderosa pine	Idaho	Defoliation was not noted, but small numbers of adults were observed in ponderosa pine stands.

Intermountain Region—Status of insects in southern Idaho, Nevada, Utah, and western Wyoming—Continued.

Insect	Host	Location	Remarks
Pine engraver <i>Ips pini</i>	Pines	Idaho	A significant increase in activity was noted throughout southern Idaho. Pine engraver beetles intermixed with western pine beetles killed 9,900 trees throughout the Region.
Pine needle sheathminer <i>Zelleria haimbachi</i>	Lodgepole pine	Idaho	Defoliation by this insect, along with the sugar pine tortrix, was noted on trees on the Boise, Payette, Sawtooth and Targhee National Forest.
Prescott scale <i>Matsucoccus vexillorum</i>	Ponderosa pine	Idaho	Infestations intermixed with pine needle sheathminer and sugar pine tortrix were noted in the Big Deer Creek drainage on the Sawtooth National Forest, ID.
Spruce beetle <i>Dendroctonus rufipennis</i>	Engelmann spruce	Idaho, Utah, Wyoming	Epidemic populations continue to cause significant mortality on the Payette National Forest, ID. Approximately 15,900 infested trees were detected in 1987. Smaller infestations are present on the Boise National Forest, ID; the Bridger-Teton National Forest, WY; and the Fishlake, Manti-LaSal and Uinta National Forests, UT.
Spruce bud scale <i>Physokermes piceae</i>	Spruces	Idaho	Infestations of spruce bud scales have been detected on ornamental spruces scattered throughout southern Idaho.
Sugar pine tortrix <i>Choristoneura lambertiana</i>	Pines	Idaho	This insect often associated with pine needle sheathminer continued to cause scattered defoliation of both lodgepole and ponderosa pines.
Western pine beetle <i>Dendroctonus brevicornis</i>	Ponderosa pine	Idaho	Significant tree mortality caused by a complex of bark beetles including the western pine beetle was detected on the Boise, Payette and Salmon National Forests, ID.
Western pineshoot borer <i>Eucosma sonomana</i>	Ponderosa pine	Idaho	Scattered infestations were noted in ponderosa pine plantations on the Boise and Payette National Forests.
Western spruce budworm <i>Choristoneura occidentalis</i>	Douglas-fir, spruce, true firs, western larch	Idaho, Utah, Wyoming	Conifers on about 873,600 acres were defoliated in 1987, compared to 3.1 million acres in 1986. Infestations declined in total acreage and intensity on the Boise, Caribou, Challis, Payette, Salmon, Sawtooth and Targhee National Forests, ID; and on the Dixie, Fishlake and Wasatch-Cache National Forests, UT.

STEM AND BRANCH DISEASES

Stem and branch diseases of forest trees are not closely monitored because change in incidence is difficult to assess annually. Those diseases occurring in the Region, but whose status is not known to have changed significantly, are noted in the summary table at the end of this report.

Dwarf Mistletoes, *Arceuthobium* spp.

Dwarf mistletoe management considerations are incorporated into most long-range plans and silvicultural prescriptions for timber management throughout the Region. Concurrently, dwarf mistletoe suppression projects are conducted to "clean up" a diminishing acreage of previously harvested stands in which infected trees were left and now overtop established regeneration. The dwarf mistletoe management program is a process of education, pre-suppression survey, evaluation, control, and post-control evaluation. Accomplishments for 1987 are reported in Table 6.

TABLE 6. Dwarf mistletoe accomplishments - Region 4, 1987.

National Forest	Presuppression Survey Acres	Suppression Project Acres	Post-Suppression Evaluation Acres
Ashley	425	323	30
Boise	24,400	550	60
Bridger-Teton	5,000	800	200
Caribou	0	465	0
Challis	50	165	135
Dixie	1,610	1,360	180
Payette	4,100	360	0
Salmon	11,500	287	200
Sawtooth	59	59	118
Targhee	20,000	714	1,400
Wasatch-Cache	0	200	0
TOTAL	67,144	5,283	2,323

ROOT DISEASES

As with stem and branch diseases, root diseases of forest trees are not closely monitored. However, new host/pathogen combinations or locations of root diseases are often identified and evaluated. Diseases causing root malformation and mortality of nursery grown seedlings are closely monitored. Status of known root pathogens of forest trees are listed in the summary table.

Root disease of nursery seedlings, *Fusarium oxysporum*, *Fusarium* sp., *Pythium* sp.

Mortality of large numbers of 1-0 ponderosa pine seedlings from several seed sources was noted at the USDA Forest Service Lucky Peak Nursery, Boise, ID. *Fusarium oxysporum* and an unidentified *Fusarium* sp. were consistently isolated from roots of affected seedlings.

As summer temperatures increased, patchy mortality of 2-0 Engelmann spruce seedlings was noted. Seedlings several inches away from initially observed mortality either died or root systems were distorted due to root mortality. However, mortality patches did not continue to expand late into summer. *Fusarium oxysporum* and a very fast growing *Pythium* sp. were consistently isolated from diseased roots.

FOLIAGE DISEASES

Douglas-fir Needle Cast, *Rhabdocline* sp.

Epidemic levels of Douglas-fir needle cast were noted throughout southern Idaho in the fall of 1987, indicating severe defoliation is expected at the beginning of the 1988 growing season. Mortality of heavily defoliated seedling and sapling-sized trees previously stressed by budworm defoliation and the 1987 drought is expected in 1988.

Limber Pine Needle Cast, *Lophodermella arcuata* (Darker) Darker

Approximately 1,500 acres of off-colored limber pine were aerially detected on the Bridger-Teton National Forest in Wyoming. Damage was caused by the needle cast fungus *Lophodermella arcuata*.

VASCULAR WILTS

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Mor.

The city of Boise, Idaho has a street-tree population of less than 2,000 elm trees. In 1987, 16 trees succumbed to dutch elm disease. The long-range plan for the city is to replace elms with trees requiring less maintenance and susceptible to fewer pests.

ABIOTIC DAMAGE

Frost Damage

Late spring frosts caused discoloration, distortion and mortality of newly emerging shoots and needles on ponderosa pine and Douglas-fir in several areas west of Council, Idaho.

Blowdown

A tornado-like storm in July resulted in extensive blowdown of spruce on the Bridger-Teton National Forest and in the Grand Teton National Park, Wyoming. On the Bridger-Teton National Forest blowdown was scattered across 14,000 acres of intermixed forest and meadow vegetation types. In the Grand Teton National Park approximately 800 acres of spruce blowdown occurred. An additional 70 acres of spruce blowdown was detected on the Ogden Ranger District of the Wasatch-Cache National Forest in Utah.

Intermountain Region—Status of diseases in southern Idaho, Nevada, Utah, and western Wyoming.

Disease	Host	Location	Remarks
STEM AND BRANCH DISEASES			
Aspen trunk rot <i>Phellinus tremulae</i>	Aspen	Idaho, Nevada, Utah, Wyoming	Decay occurs in most aspen stands in the Region.
Comandra blister rust <i>Cronartium comandrae</i>	Lodgepole pine, ponderosa pine	Idaho, Utah, Wyoming	Infections occur infrequently on lodgepole pine in Idaho, Utah and Wyoming and infrequently on ponderosa pine across southern Idaho.
Dwarf mistletoes <i>Arceuthobium</i> spp.	Douglas-fir, lodgepole pine, ponderosa pine, western larch, Jeffrey pine	Idaho, Nevada, Utah, Wyoming	These continue to be the most widespread and frequently observed pests in southern Idaho. Suppression projects removed infected overstory trees from 5,283 acres.
Red ring rot <i>Phellinus pini</i>	Western larch, true firs, spruce, Douglas-fir, pines	Idaho, Utah, Wyoming	This fungus occurs throughout the Region in stands of mature conifers. Infection intensity is highly variable.
Rust-red stringy rot <i>Echinodontium tinctorium</i>	Grand fir, white fir, subalpine fir	Idaho, Nevada	Decay caused by this fungus is common in mature and overmature stands of true firs.
Stalactiform blister rust <i>Cronartium coleosporioides</i>	Lodgepole pine	Idaho, Utah, Wyoming	This rust occurs in localized areas of host type across the Region. Heavy infection has been noted in several areas.
Western gall rust <i>Endocronartium harknessii</i>	Lodgepole pine, ponderosa pine	Idaho, Utah, Wyoming	Gall rust occurs throughout host types. Infection levels are highly variable.
ROOT DISEASES			
Annosus root disease <i>Heterobasidion annosum</i>	Douglas-fir, lodgepole pine, ponderosa pine, true firs	Idaho, Nevada, Utah, Wyoming	This fungus occurs as a root and butt rot of true firs. It causes a root rot, frequently in young ponderosa pines and infrequently in lodgepole pine and Douglas-fir.
Armillaria root disease <i>Armillaria</i> sp.	Douglas-fir, grand fir, pines, spruce	Idaho, Utah, Wyoming	While evidence of <i>Armillaria</i> may be found throughout southern Idaho, in most instances it functions as a weak pathogen or saprophyte. In Utah infection levels increase following thinning in lodgepole pine stands.

Intermountain Region—Status of diseases in southern Idaho, Nevada, Utah, and western Wyoming—Continued.

Insect	Host	Location	Remarks
Schweinitzii butt rot <i>Phaeolus schweinitzii</i>	Douglas-fir, ponderosa pine	Idaho	Decay is common in mature and over-mature forests, especially those having a recent fire or logging history. The fungus is often found associated with other root diseases and bark beetles.
Tomentosus root disease <i>Inonotus tomentosus</i>	Douglas-fir, spruce, subalpine fir	Idaho, Utah	The fungus is commonly found with <i>P. schweinitzii</i> as a root/butt rot of pole-size Douglas-fir and spruce—less often of subalpine fir—in southern Idaho. Infection may result in occasional mortality.
FOLIAGE DISEASES			
Douglas-fir needlecast <i>Rhabdocline</i> spp.	Douglas-fir	Idaho	Heavy infection levels were noted in the fall of 1987 throughout the range of the host in central and southeastern Idaho. Defoliation levels will be high during early 1988.
Elytroderma disease <i>Elytroderma deformans</i>	Ponderosa pine	Idaho	High levels of infection were noted in stands on Little Donner Summit, Cascade, ID and in Manhattan Creek, Idaho City, ID.
Fir broom rust <i>Melampsorella caryophyllacearum</i>	Subalpine fir	Idaho, Utah, Wyoming	Infection occurs scattered throughout the host type, but high infection levels have been noted in forested areas south of Twin Falls and Burley, ID.
Fir needle cast <i>Lirula</i> spp.	Subalpine fir, grand fir	Idaho	Infected stands were found on the Council and Weiser Ranger Districts of the Payette National Forest.
Larch needle cast <i>Meria laricis</i>	Western larch	Idaho	Incidence and severity of infection throughout the host type in west-central Idaho was at a very low level.
Limber pine needle cast <i>Lophodermella arcuata</i>	Limber pine	Wyoming	Heavy infection of limber pine was aerially detected on 1,500 acres on the Bridger-Teton National Forest.
Marssonina blight <i>Marssonina populi</i>	Aspen	Idaho, Utah, Wyoming	Scattered incidence of light intensity was noted throughout most of the host range. Moderate to heavy infections were observed on the Wasatch-Cache, Ashley and Manti-LaSal National Forests, UT.
Spruce broom rust <i>Chrysomyxa arctostaphyli</i>	Engelmann spruce	Idaho, Utah, Wyoming	Infection occurs scattered throughout the host type. It is common in eastern Idaho.

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